

**Final
Site-Specific Field Sampling Plan Attachment
Site Investigation at the Former Motor Pool Area
1800/1900, Parcels 145(7), 52(7)**

**Fort McClellan
Calhoun County, Alabama**

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List of Acronyms

ADEM	Alabama Department of Environmental Management
bls	below land surface
CERFA	Community Environmental Response Facilitation Act
CESAS	Corps of Engineers South Atlantic Savannah
COPC	chemical(s) of potential concern
DOD	U.S. Department of Defense
DQO	data quality objective
EBS	environmental baseline survey
EPA	U.S. Environmental Protection Agency
ESE	Environmental Sciences and Engineering, Inc.
FID	flame ionization detector
FTMC	Fort McClellan
GPS	global positioning system
IDW	investigation-derived waste
IT	IT Corporation
MCL	maximum contaminant level
µg/L	micrograms per liter
mg/kg	milligrams per kilogram
PAH	polyaromatic hydrocarbon
PSSC	potential site-specific chemical(s)
ppm	parts per million
QA/QC	quality assurance/quality control
QAP	installation-wide quality assurance plan
SAP	installation-wide sampling and analysis plan
SFSP	site-specific field sampling plan
SHP	installation-wide safety and health plan
SSHP	site-specific safety and health plan
SI	site investigation
SVOC	semivolatile organic compound
TAL	target analyte list
TCL	target compound list
TPH	total petroleum hydrocarbon
TRPH	total recoverable petroleum hydrocarbon

List of Acronyms *(Continued)*

USACE	U.S. Army Corps of Engineers
UST	underground storage tank
VOC	volatile organic compound
WMP	waste management plan
WP	installation-wide work plan

Executive Summary

In accordance with Contract No. DACA21-96-D-0018, Delivery Order CK005, IT Corporation (IT) will conduct site investigation activities at the Former Motor Pool Area 1800/1900, Parcel 145(7) and 52(7), at Fort McClellan (FTMC), Calhoun County, Alabama, to determine the presence or absence of potential site-specific chemicals at this site (Figure 1-1). The purpose of this site-specific field sampling plan (SFSP) is to provide technical guidance for sampling activities at the Former Motor Pool Area 1800/1900 site.

The Former Motor Pool Area 1800/1900 (Parcel 145[7]) is located on 10th Avenue, south of the Burger King in the central area of the main post. This former motor pool covers approximately 15 acres and is now used as a staging and storage area for vehicles. Information is not available concerning dates or details of operations at this motor pool. Light motor vehicle maintenance is conducted inside Building 1997 at this location. The drains in this maintenance building drain to the sanitary sewer.

Two other buildings (1898 and 1899), south of Building 1997 are used for storage space. The facility does not have an active wash rack, but the former motor pool had a wash rack at Building 1831 which was built in 1976 (Environmental Science and Engineering, Inc. [ESE], 1998). Building 1831 no longer exists at the site; however, there is a concrete foundation just south of building 1899 that may be the probable location of Building 1831. There was an oil/water separator (OWS) at this wash rack that was connected directly to the sanitary sewer system; however, evidence of the OWS was not observed. A review of the early aerial photographs did not reveal the previous wash rack or OWS. However, two above ground vehicle grease racks were observed in the northeast section of the site.

There is a 2,500-gallon steel heating oil tank, located at the south end of Building 1997 (Parcel 52 [7]). The original UST was removed on October 28, 1996, and subsequently replaced with a new 2,500-gallon fiberglass tank with interstitial monitoring. The newly installed UST appears to meet ADEM requirements (SEMS, 1997).

Specifically, IT will collect ten surface soil samples, twelve subsurface soil samples, ten groundwater samples, two surface water samples, two sediment samples, and 2 depositional soil samples at this site. Potential contaminant sources at the Former Motor Pool Area 1800/1900 site include heating oil and other petroleum products (e.g., gasoline, diesel, waste oil, lubricants, and possibly metals). Chemical analyses of the samples collected during the field program will

include volatile organic compounds, semivolatile organic compounds, and metals. Results from these analyses will be compared with site-specific screening levels as specified in the installation-wide work plan (WP) and regulatory agency guidelines.

This SFSP attachment to the installation-wide sampling and analysis plan (SAP) for the Former Motor Pool Area 1800/1900, Parcels 145(7) and 52(7) will be used in conjunction with the site-specific safety and health plan (SSHP), and the WP and SAP. The SAP includes the installation-wide safety and health plan, waste management plan, and quality assurance plan. Site-specific hazard analyses are included in the SSHP.

1.0 Project Description

1.1 Introduction

The U.S. Army is conducting studies of the environmental impact of suspected contaminants at Fort McClellan (FTMC) in Calhoun County, Alabama, under the management of the U.S. Army Corps of Engineers (USACE)-Mobile District. The USACE has contracted IT Corporation (IT) to provide environmental services for the site investigation (SI) of the Former Motor Pool Area 1800/1900, Parcels 145(7) and 52(7), under Delivery Order CK005, Contract No. DACA21-96-D-0018.

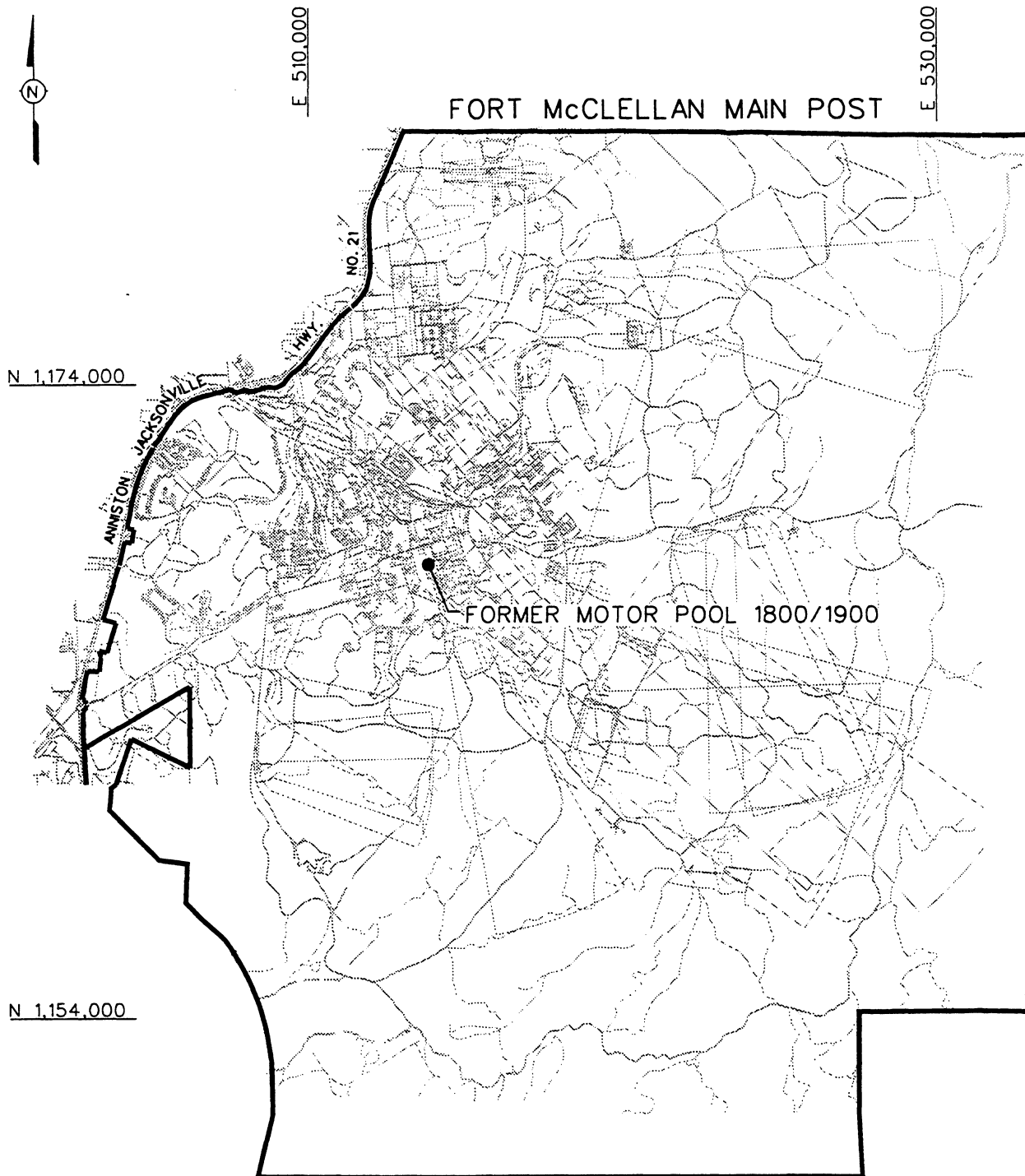
This site-specific field sampling plan (SFSP) attachment to the installation-wide sampling and analysis plan (SAP) (IT Corporation [IT], 1997a) for Fort McClellan (FTMC), Calhoun County, Alabama, has been prepared to provide technical guidance for sample collection and analysis at the Former Motor Pool Area 1800/1900, Parcel Nos. 145(7) and 52(7) (Figure 1-1). The SFSP will be used in conjunction with the site-specific safety and health plan (SSHP) developed for the Motor Pool Area 1800/1900 site, and the installation-wide work plan (WP) (IT, 1998b), and the SAP. The SAP includes the installation-wide safety and health plan (SHP) and quality assurance plan (QAP). Site-specific hazardous analyses are included in the SSHP.

1.2 Site Description

The Former Motor Pool Area 1800/1900 (Parcel 145[7]) site is located on 10th Avenue, south of the Burger King in the central area of the Main Post (Figure 1-1). This former motor pool covers approximately 15 acres, and is now used as a staging and storage area for vehicles. Information is not available concerning dates or details of the former operations at this motor pool. Light motor vehicle maintenance is conducted inside Building 1997 (Figure 1-2). The drains in this maintenance building discharge to the sanitary sewer. Two other buildings (1898 and 1899), south of Building 1997 are used for storage space (Figure 1-2). The facility does not have an active wash rack, but the former motor pool had a wash rack at Building 1831 which was built in 1976 (Environmental Science and Engineering, Inc. [ESE], 1998). Building 1831 no longer exists at the site; however, there is a concrete foundation just south of building 1899 that may be the location of Building 1831. There was an oil/water separator (OWS) at this wash rack that was connected directly to the sanitary sewer system; however, evidence of the OWS was not observed. A review of early aerial photographs did not reveal the wash rack or OWS. However, two aboveground vehicle grease racks were observed in the northeast section of the site (Figure 1-2).

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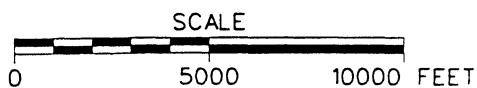
FORT McCLELLAN BOUNDARY

FIGURE 1-1

SITE LOCATION MAP

FORMER MOTOR POOL 1800/1900
 PARCELS 145(7) AND 52(7)

U. S. ARMY CORPS OF ENGINEERS
 MOBILE DISTRICT
 FORT McCLELLAN
 CALHOUN COUNTY, ALABAMA
 Contract No. DACA21-96-D-0018



INTERNATIONAL
 TECHNOLOGY
 CORPORATION

There is a 2,500-gallon steel heating oil tank (Parcel 52[7]) located at the south end of Building 1997. The original UST was removed on October 28, 1996, and was subsequently replaced with a new 2,500-gallon fiberglass tank with interstitial monitoring. The newly installed UST appears to meet ADEM requirements (SEMS, 1997).

The site slopes primarily from northeast to southwest with the highest elevation at 790 feet. Surface water drains to the west. Local shallow groundwater direction at the site is probably controlled by topography, therefore, groundwater direction in the residuum is likely to the west; toward the South Branch of Cane Creek.

Soils at the Former Motor Pool Area 1800/1900 consist of soils of the Anniston and Allen Series. The Anniston and Allen Series of soils consists of strongly acid, deep well drained soils that have developed in old local alluvium. The parent material washed from the adjacent higher lying Linker, Muskingum, Enders, and Montevallo soils, which developed from weathered sandstone, shale, and quartzite. Sandstone and quartzite gravel and cobbles, as much as 8 inches in diameter, are on the surface and throughout the soil.

Soils at this site fall into the Anniston and Allen gravelly loams, 6 to 10 percent slopes, eroded (AcC2) (U.S. Department of Agriculture, 1961). Some severely eroded areas may be common on the surface for this soil type as well as a few shallow gullies. The depth to bedrock ranges from 2 feet to greater than 10 feet. The typical soil description is 2 to 10 feet of well-drained stony loam to clay loam over stratified local alluvium; limestone or shale bedrock. The depth to the water table is likely greater than 20 feet.

This mapping unit consists of friable soils that have developed in old alluvium on foot slopes and along the base of mountains. The color of the surface soil ranges from very dark brown and dark brown to reddish brown and dark reddish brown. The texture of subsoil ranges from light clay loam to clay or silty clay loam. The alluvium ranges in thickness from 2 to more than 8 feet. Infiltration and runoff are medium, permeability is moderate, and the capacity for available moisture is high. Organic matter is moderately low.

1.3 Scope of Work

The scope of work for activities associated with the site investigation at the Former Motor Pool Area 1800/1900 site, as specified by the statement of work (U.S. Army Corps of Engineers [USACE], 1998), includes the following tasks:

- Develop the SFSP attachment.
- Develop the SSHP attachment.
- Perform a geophysical survey to determine the locations of any unknown USTs.
- Collect ten surface soil samples, twelve subsurface soil samples, ten groundwater samples, two surface water samples, two sediment samples and two depositional soil samples to determine whether potential site-specific chemicals (PSSC) are present at the Former Motor Pool Area 1800/1900 site and to provide data useful for supporting any future planned corrective measures and closure activities.

At completion of the field activities and sample analyses, draft and final SI summary reports will be prepared to evaluate the absence or presence of PSSC at this site, and to recommend further actions, if appropriate.

2.0 Summary of Existing Environmental Studies

An environmental baseline survey (EBS) was conducted by ESE to document current environmental conditions of all FTMC property (ESE, 1998). The study was to identify sites that, based on available information, have no history of contamination and comply with U.S. Department of Defense (DOD) guidance for fast track cleanup at closing installations.

The EBS also provides a baseline picture of FTMC properties by identifying and categorizing the properties by seven criteria.

1. Areas where no storage, release, or disposal (including migration) has occurred.
2. Areas where only storage has occurred.
3. Areas of contamination below action levels.
4. Areas where all necessary remedial actions have been taken.
5. Areas of known contamination with removal and/or remedial action underway.
6. Areas of known contamination where required response actions have not been taken.
7. Areas that are not evaluated or require further evaluation.

The EBS was conducted in accordance with the Community Environmental Response Facilitation Act (CERFA) (CERFA-Public Law 102-426) protocols and DOD policy regarding contamination assessment. Records searches and reviews were performed on all reasonably available documents from FTMC, ADEM, EPA Region IV, and Calhoun County, as well as a database search of Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)-regulated substances, petroleum products, and Resource Conservation and Recovery Act (RCRA)-regulated facilities. Available historic maps and aerial photographs were reviewed to document historic land uses. Personal and telephone interviews of past and present FTMC employees and military personnel were conducted. In addition, visual site inspections were conducted to verify conditions of specific property parcels.

On October 9, 1996, the 2,500-gallon steel heating oil tank, located at the south end of Building 1997 was removed and on October 28, 1996, subsequently replaced with a new 2,500-gallon fiberglass tank with interstitial monitoring. The newly installed UST appears to meet ADEM

requirements (SEMS, 1997). The report stated that groundwater was more than five feet below the excavation; however, the report also listed the results of one groundwater sample labeled TP1-1997 (SEMS, 1997). The analytical results, presented in Table 2-1, for the groundwater sample collected does not indicate the presence of total petroleum hydrocarbons. A description of specific location or depth of the water sample is not provided in the report.

The Former Motor Pool Area 1800/1900 was identified as a CERFA site. This CERFA site is a parcel where petroleum products were stored, and possibly released onto the site or to the environment, and/or were disposed of on site property. Limited sampling and analyses of soil and water have not verified whether or not there has been a potential release or disposal of PSSC on site. The Former Motor Pool Area 1800/1900 lacks adequate documentation and, therefore requires additional evaluation to determine the environmental condition of the parcel.

Table 2-1

**Sample Data^a for the Removal of Building 1997 UST,
2,500-Gallon Heating Oil Tank
Former Motor Pool Area 1800/1900, Parcels 145(7) and 52(7)
Fort McClellan, Calhoun County, Alabama**

Sample Number	Sample Date	Sample Media	Sample Location	Depth (feet)	Analytical Parameter
					TPH ^b (mg/L)
TP1-1997	10/28/96	Water	not given	not given	< 6.44

^aSouthern Environmental Management & Specialties (SEMS), 1997, *Closure Report, Underground Storage Tank Removals, Site Remediation, and Site Restoration, Fort McClellan Alabama*, February.

^bTotal petroleum hydrocarbon compounds.

3.0 Site-Specific Data Quality Objectives

3.1 Overview

The data quality objective (DQO) process is followed to establish data requirements. This process ensures that the proper quantity and quality of data are generated to support the decision-making process associated with the action selection for the Former Motor Pool Area 1800/1900 site. This section incorporates the components of the DQO process described in the EPA publication EPA 540-R-93-071 *Data Quality Objectives Process for Superfund* (EPA, 1993). The DQO process as applied to the Former Motor Pool Area 1800/1900 site is described in more detail in Sections 3.2 and 4.3 of the WP. Table 3-1 provides a summary of the factors used to determine the appropriate quantity of samples, the procedures necessary to meet the objectives of the site investigation, and to establish a basis for future action at this site.

The samples will be analyzed using EPA SW-846 methods, including Update III Methods where applicable, as presented in Chapter 4.0 in this SSFP and Table 6-1 in the QAP. Data will be reported and evaluated in accordance with Corps of Engineers South Atlantic Savannah (CESAS) Level B criteria (USACE, 1994) and the stipulated requirements for the generation of definitive data (Section 3.1.2 of the QAP). Chemical data will be reported via hard copy data packages by the laboratory using Contract Laboratory Program (CLP)-like forms. These packages will be validated in accordance with EPA National Functional Guidelines by Level III criteria.

3.2 Data Users and Available Data

The available data, presented in Table 3-1, related to the site investigation at the Former Motor Pool Area 1800/1900 site have been used to formulate a site-specific conceptual model. This conceptual model was developed to support the development of this SFSP, which is necessary to meet the objectives of these activities and to establish a basis for future action at the site. The data users for the data and information generated during field activities are primarily the EPA, USACE, ADEM, FTMC, and the USACE supporting contractors. This SFSP, along with the necessary companion documents, has been designed to provide the regulatory agencies with sufficient detail to reach a determination as to the adequacy of the scope of work. The program has also been designed to provide the level of defensible data and information required to confirm or rule out the existence of residual chemical contamination in site media, and if needed, determine the nature and extent of PSSC.

Table 3-1

Summary of Data Quality Objectives
Site Investigation, Former Motor Pool Area 1800/1900, Parcels 145(7) and 52(7)
Fort McClellan, Calhoun County, Alabama

Potential Data Users	Available Data	Conceptual Site Model	Media of Concern	Data Uses and Objectives	Data Types	Analytical Level	Data Quantity
EPA, ADEM USACE, DOD FTMC, IT Corporation Other Contractors Possible future land users	Minimal UST Removal Sample Data	Contaminant Source Former Motor Pool Facility, <u>Migration Pathways</u> Groundwater infiltration, leaching, and surface runoff, erosion, VOC and direct emission	<u>Soils</u> <u>Groundwater</u> <u>Surface Water</u>	SI to confirm the presence or absence of PSSC in the site media.	Surface soil TCL VOCs, TCL SVOCs, TAL Metals,	Definitive data in CESAS Level B data packages	10 direct push soil samples + QC
			<u>Sediment</u> <u>Depositional Soil</u>		Subsurface Soil TCL VOCs, TCL SVOCs, TAL Metals,	Definitive data in CESAS Level B data packages	12 direct push soil samples + QC
		<u>Potential Receptors</u> groundskeepers, construction workers, youthful visitor, residents terrestrial and aquatic organisms		Definitive quality data for future decision making	Groundwater TCL VOCs, TCL SVOCs, TAL Metals,	Definitive data in CESAS Level B data packages	10 direct-push groundwater samples + QC
		<u>PSSC</u> Diesel fuel, waste oil, other petroleum products; possibly solvents and metals			Surface Water TCL VOCs, TCL SVOCs, TAL Metals,	Definitive data in CESAS Level B data packages	2 surface water samples + QC
					<u>Sediment</u> TCL VOCs, TCL SVOCs, TAL Metals, TOC, Grain Size	Definitive data in CESAS Level B data packages	2 sediment samples + QC
					<u>Depositional Soil</u> TCL VOCs, TCL SVOCs, TAL Metals,	Definitive data in CESAS Level B data packages	2 depositional samples + QC

ADEM - Alabama Department of Environmental Management.

CESAS - Corps of Engineers South Atlantic Savannah.

DOD - U.S. Department of Defense.

EPA - U.S. Environmental Protection Agency.

FTMC - Fort McClellan.

PSSC - Potential site-specific chemical.

QC - Quality control.

VOC - Volatile organic compound.

SVOC - Semivolatile organic compound.

TAL - Target analyte list.

TCL - Target Compound list.

USACE - U.S. Army Corps of Engineers.

3.3 Conceptual Site Exposure Model

The conceptual site exposure model (CSEM) provides the basis for identifying and evaluating the potential risks to human health in the risk assessment. The CSEM includes the receptors appropriate to plausible scenarios, and the potential exposure pathways. Graphically presenting possible pathways by which a potential receptor may be exposed, including sources, release and transport pathways, and exposure routes, facilitates consistent and comprehensive evaluation of risk to human health, and helps to ensure that potential pathways are not overlooked. The elements necessary to construct a complete exposure pathway and develop the CSEM include:

- Source (i.e., contaminated environmental) media
- Contaminant release mechanisms
- Contaminant transport pathways
- Receptors
- Exposure pathways.

Contaminant release mechanisms and transport pathways are not relevant for direct receptor contact with a contaminated source medium.

Chemicals of potential concern (COPC) at this site includes fuels and fuel components, waste oils, organic chemicals associated with vehicular maintenance, and possibly metals. Primary contaminant release was probably to surface and subsurface soil. Potential contaminant transport pathways include infiltration to subsurface soil, infiltration and leaching to groundwater, erosion and runoff to the surface water and sediment in South Branch of Cane Creek (located west of the site) and dust emissions and volatilization to ambient air.

Motor Pool Area 1800/1900 is presently used for staging, storing and light maintenance of military vehicles; therefore, current site use is best characterized as industrial. Plausible receptors under the current site use scenario include the groundskeeper, construction worker and the youthful visitor who visits the site (except for the secured area around Building 1997) and plays in the creek. Other potential receptors considered but not included under current site use are:

- Sportsman: The site is used for industrial purposes and cannot serve as a habitat for game animals.
- On-site resident: The site is not currently used or scheduled for residential development.
- Off-site resident: There are no nearby residential areas that would receive contaminants from the site.

Future use of these sites may continue as industrial, probably supporting National Guard activities (Fort McClellan Reuse and Redevelopment Authority of Alabama, 1997). The most conservative assumption is that residential development could occur. Plausible receptors under the future site use scenario(s) include the groundskeeper, construction worker and resident. The exposure pathways addressed under the youthful visitor scenario are evaluated more stringently under the residential exposure scenario. The sportsman and off-site resident are not evaluated under the future land-use scenario for the reasons provided above. The contaminant release and transport mechanisms, source and exposure media, receptors and exposure pathways are summarized in Figure 3-1.

Assessment of potential ecological risk associated with sites or parcels (e.g., surface water and sediment sampling, specific ecological assessment methods, etc.) will be addressed in a separate document to be issued as the Habitat-Specific Screening Ecological Risk Assessment Work Plan.

3.4 Decision-Making Process, Data Uses, and Needs

The decision-making process consists of a seven-step process that is presented in detail in Sections 3.2 and 4.3 of the WP and will be followed during the site investigation at the Former Motor Pool Area 1800/1900 site. Data uses and needs are summarized in Table 3-1.

3.4.1 Risk Evaluation

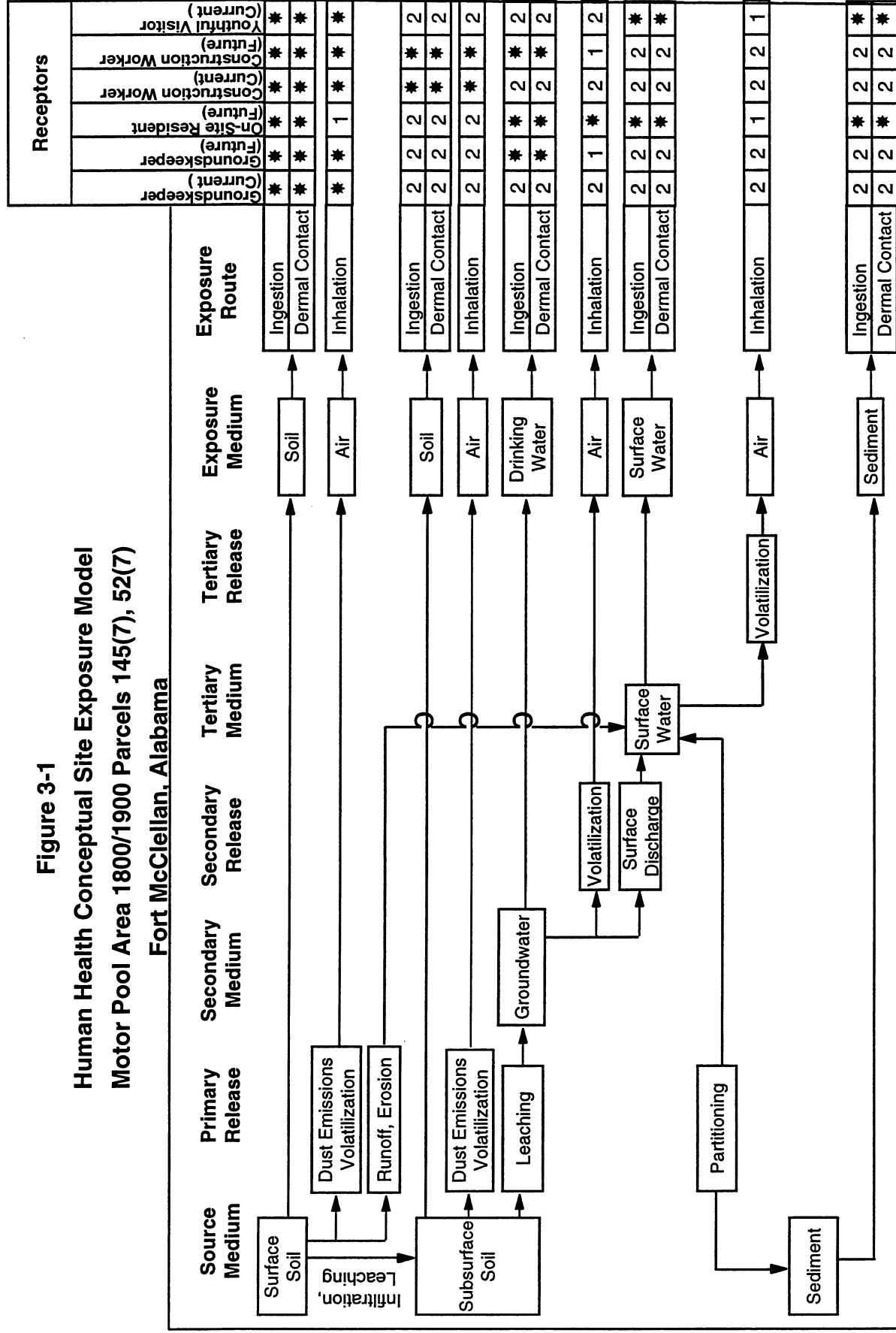
Confirmation of contamination at the Former Motor Pool Area 1800/1900 will be based on comparing detected site COPC to site-specific screening levels developed in the WP. EPA definitive data with CESAS Level B data packages will be used to achieve detection limits sufficient to determine whether or not the established guidance criteria are exceeded in site media. Definitive data will be adequate for confirming the presence of site contamination and for supporting a feasibility study and risk assessment.

3.4.2 Data Types and Quality

Surface and subsurface soil, groundwater, surface water, sediment, and depositional soil will be sampled and analyzed in order to meet the objectives of the site investigation at the Former Motor Pool Area 1800/1900 site. Quality assurance/quality control (QA/QC) samples will be collected for all sample types as described in Chapter 4.0 of this SFSP. Samples will be analyzed by EPA-approved SW-846 methods Update III, where available; comply with EPA definitive data requirements; and be reported using hard copy data packages. In addition to meeting the quality needs of this SI, data analyzed at this level of quality are appropriate for all phases of site characterization, remedial investigation, and risk assessment.

Figure 3-1

Human Health Conceptual Site Exposure Model
Motor Pool Area 1800/1900 Parcels 145(7), 52(7)
Fort McClellan, Alabama



* = Complete exposure pathway evaluated in baseline risk assessment
1 = Although theoretically complete, this pathway is judged to be insignificant.
2 = Incomplete exposure pathway.

3.4.3 Precision, Accuracy, and Completeness

Laboratory requirements of precision, accuracy, and completeness for this SI are provided in Chapter 9.0 of the QAP.

4.0 Field Activities

4.1 Utility Clearances

Prior to performing any intrusive sampling, a utility clearance will be performed at all locations where soil and groundwater samples will be collected, using the procedure outlined in Section 4.2.6 of the SAP. The site manager will mark the proposed locations with stakes, coordinate with the installation to clear the proposed locations for utilities, and obtain digging permits. Once the locations are cleared, the stakes will be labeled as cleared.

4.2 Surface Geophysical Survey

Geophysical survey techniques offer the best approach to locating potential USTs at the Former Motor Pool Area 1800/1900 site and any other subsurface features related to USTs. A surface geophysical survey using magnetics, time- and frequency-domain electromagnetic (EM) induction, and ground-penetrating radar (GPR) techniques will be conducted over the Former Motor Pool Area 1800/1900 to locate any existing USTs at the site.

4.2.1 Methodology and Instrumentation

The magnetic surveys will be conducted using a Geometrics G-858G magnetic gradiometer (for collecting survey data) and a Geometrics G-856AX magnetometer or equivalent (for collecting base station data). The time-domain EM surveys will be conducted using a Geonics EM61 high-resolution metal detector coupled to an Omnidata DL720 digital data logger. Frequency-domain EM surveys will be conducted using a Geonics EM31 and EM34-3XL terrain conductivity meter, each coupled to an Omnidata DL720 digital data logger. Use of the G-858G and the EM31 is the preferred method of detecting tanks; however, in areas of significant cultural interference (e.g., structures, fences, reinforced concrete), the EM61 will be employed, since this system is less affected by surface culture. The EM34-3XL surveys will be conducted based on site-specific conditions in which deep burial of target materials is suspected. The GPR survey will be conducted using a Geophysical Survey Systems Inc. System-2P or equivalent, coupled to either 200- or 400-megahertz antennas, depending on site conditions and signal attenuation. If required, a Metrotech 9860-NRL EM utility locator or equivalent will be used to confirm the presence or absence of metallic subsurface utilities, which may be evident as linear anomalies in the EM31 or EM61 contour maps.

Geophysical survey procedures to be used to conduct the investigation, including survey control, equipment calibration, field base station and data validation, data processing and interpretation,

and file tracking procedures, will be in accordance with the methods and procedures outlined in Chapter 4.0 of the SAP (IT, 1998a) and the following IT standard operating procedures for geophysical investigations:

- ITGP-001: Surface Magnetic Surveys
- ITGP-002: Surface Frequency-Domain EM Surveys
- ITGP-003: GPR Surveys
- ITGP-004: Surface Time-Domain Electromagnetic Surveys
- ITGP-005: Global Positioning System (GPS) Surveys.

The following tasks will be performed prior to conducting the survey:

- Review existing site surface and subsurface information (e.g., aerial photographs, utility maps, boring logs, etc.).
- Evaluate the potential influence of cultural features (e.g., overhead and subsurface utilities, fences, buildings, etc.).
- Conduct a visual inspection of the sites to verify the likely boundaries of the Former Motor Pool Area 1800/1900.
- Conduct reconnaissance scans across the general area of the site with the magnetic and/or EM instruments to determine whether geophysical anomalies exist within the proposed survey areas and/or near the proposed boundaries. The geophysical survey area boundaries for the site will be chosen in the field based on these results.

Following visual inspection of the site and evaluation of reconnaissance scans with the instruments, a base grid will be staked throughout the site such that the resolution objectives of the investigation are achieved (typically 50- to 100-foot centers). The geophysics base grid will be referenced to the Alabama State Plane Coordinate System. The geophysics crew will establish control points on 20-foot centers throughout the site. The control points will be marked with surveyor's paint and/or plastic pinflags. To the extent possible, the grid will be oriented in the north to south (N-S) direction. If surface metal is present, it shall be removed where possible prior to collecting geophysical data.

After the survey grid is complete and control points are marked, all surface objects that could potentially affect the geophysical data (e.g., surface metal, variations in topography, overhead utilities, etc.) will be mapped using the GPS so that anomalies caused by these objects can be correctly interpreted.

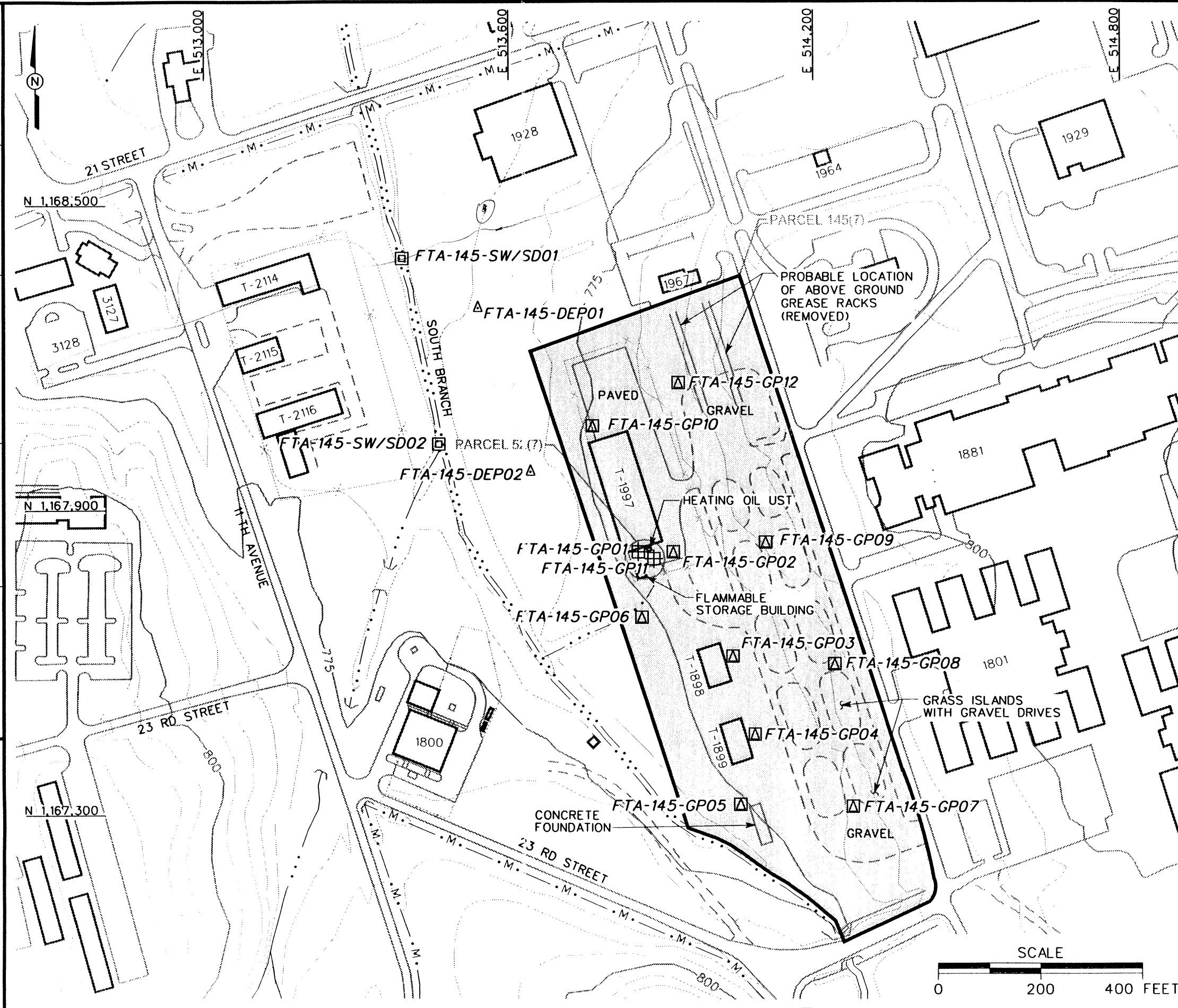
Geophysical data processing will be completed in the field following the survey. The EM and magnetic data will be presented as color-enhanced contour maps to facilitate recognition of subtle anomalies. Geophysical anomalies will be field-checked to verify their source as either surface culture or subsurface objects/debris. Surface source materials responsible for the observed geophysical anomalies will be documented on the contour maps. Anomalies caused by subsurface source materials the size of a UST will be marked in the field for further characterization with GPR. GPR will be used to discriminate between anomalies caused by USTs and those potentially caused by pits containing significant metal debris.

The conclusions from the geophysical survey at this site will be incorporated into the SI report and a geophysics report will be provided as an appendix to the SI report.

4.2.2 Areal Coverage

The Former Motor Pool Area 1800/1900 site geophysical surveys will encompass the shaded area shown in Figure 4-1. The following is a list of steps that will be performed at the site:

- G-858G magnetic gradiometer data will be collected at 0.5-second intervals (approximate 2.0- to 2.5-foot intervals) along N-S oriented survey lines spaced 10 feet apart.
- EM31 survey data will be collected at 5-foot intervals along N-S and east to west (E-W) oriented survey lines spaced 10 feet apart.
- EM34-3XL survey data will be collected, if necessary, using the 10- and 20-meter intercoil spacing configuration. Data will be collected in the vertical and horizontal dipole orientations at 2.5-meter intervals along N-S oriented survey lines spaced 2.5 meters apart.
- EM61 survey data will be collected at approximate 2.5-foot intervals along N-S and E-W oriented survey lines spaced 5 feet apart.
- GPR profile data will be collected to further characterize anomalies potentially representing the USTs seen in the magnetic and/or EM data. The orientation and length of the GPR lines will be chosen in the field to yield the most usable results.
- In areas of the site where linear EM31 or EM61 anomalies potentially representing pipelines/utilities are observed in the contoured data, the lines will be verified with the Metrotech 9860-NRL EM utility locator. Verification is necessary since the anomalous response caused by subsurface utilities may sometimes be mistaken for



LEGEND






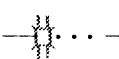
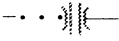







- | | |
|---|---|
|  | UNIMPROVED ROADS AND PARKING |
|  | PAVED ROADS AND PARKING |
|  | BUILDING |
|  | TOPOGRAPHIC CONTOURS |
|  | PARCEL BOUNDARY |
|  | BRIDGE |
|  | CULVERT WITH HEADWALL |
|  | SURFACE DRAINAGE / CREEK |
|  | MANMADE SURFACE DRAINAGE
FEATURE |
|  | FENCE |
|  | PROPOSED SURFACE WATER/
SEDIMENT SAMPLE |
|  | PROPOSED SUBSURFACE SOIL
SAMPLE |
|  | PROPOSED GROUNDWATER, SURFACE
AND SUBSURFACE SOIL SAMPLE |
|  | PROPOSED DEPOSITIONAL SOIL
SAMPLE |

FIGURE 4-1
PROPOSED SAMPLE LOCATIONS
FORMER MOTOR POOL 1800/1900
PARCELS 145(7) & 52(7)

U. S. ARMY CORPS OF ENGINEERS
MOBILE DISTRICT
FORT McCLELLAN
CALHOUN COUNTY, ALABAMA
Contract No. DACA21-96-D-0018



large buried metal objects. The locations of interpreted pipelines will be marked in the field with surveyor's paint and placed on the site map.

It is anticipated that three of the geophysical surveys described will be conducted: G-858G magnetic gradiometer, EM31, and EM61. However, as field conditions dictate, some or all of the survey techniques will be utilized. Due to the limited information about the Former Motor Pool Area 1800/1900, the most efficient reconnaissance process will be to address the complete site with the geophysical surveys instead of targeting any specific part of the site.

4.2.3 Underground Storage Tank Exploratory Test Pits

Upon completion of the geophysical survey at each site, the data will be reviewed for possible anomalies indicative of USTs. Anomalies that are found of typical size and in logical areas for USTs (i.e., adjacent to typical FTMC gas station foundations) will be identified and labeled as USTs. Anomalies that are of typical sizes but not in logical locations for USTs will be labeled as potential USTs.

At each anomaly labeled as a potential UST, an exploratory test pit will be excavated to determine if the feature or anomaly detected is either a UST or is not a UST. These UST exploratory test pits will be excavated using a backhoe equipped with a 3-foot-wide bucket. If the presence of a UST is confirmed, the UST will not be removed. The excavated soil will be returned to the test pit and the location marked with a stake. The location and observations will be recorded in the field log.

If some type of material other than a UST is found, the type of material and location will be noted in the field log and the material will be placed back in the excavation. The location will be marked with a stake. If nothing is found in the excavation, the test pit will be backfilled with the excavated material. The label "potential UST" will be removed from the location of the geophysical anomaly.

4.3 Environmental Sampling

The environmental sampling program at the Former Motor Pool Area 1800/1900 site includes the collection of surface and subsurface soil, groundwater, surface water, sediment and depositional soil samples for chemical analyses. These samples will be collected and analyzed to provide data for characterizing the site in order to determine the environmental condition of the site and any further action to be conducted at the site.

4.3.1 Surface Soil Sampling

Surface soil samples will be collected from ten of the twelve soil borings installed at the Former Motor Pool Area 1800/1900 site.

4.3.1.1 Sample Locations and Rationale

The surface soil samples will be collected near the former motor pool buildings, near the concrete foundation (probable wash rack), in drainage pathways, and in the gravel lot around Buildings 1898, and 1899. The surface soil sampling rationale is listed in Table 4-1. Proposed sampling locations are shown in Figure 4-1. Surface soil sample designations and required QA/QC sample requirements are summarized in Table 4-2. The final soil boring sampling locations will be determined in the field by the on-site geologist based on actual field conditions.

4.3.1.2 Sample Collection Procedures

Surface soil samples will be collected from the upper 1 foot of soil by direct-push methodology as specified in Section 4.7.1.1 of the SAP. Collected soil samples will be screened using a photoionization detector (PID) in accordance with Section 4.15 of the SAP. Sample containers, sample volumes, preservatives and holding times for the analyses required in this SFSP are listed in Section 5.0, Table 5-1, of the QAP. Sample documentation and chain-of-custody will be recorded as specified in Section 4.13 of the SAP. The samples will be analyzed for the parameters listed in Section 4.6.

4.3.2 Subsurface Soil Sampling

Subsurface soil samples will be collected from 12 soil borings installed at the Former Motor Pool Area 1800/1900 site. Soil samples will be collected near the UST site, near the former motor pool buildings, near the concrete foundation (probable wash rack), in drainage pathways, and in the gravel lot around Buildings 1898, and 1899. The exact location of the UST and underground pipelines will be determined from visual observations and the utility clearance surveys.

4.3.2.1 Sample Locations and Rationale

Subsurface soil samples will be collected from the soil borings proposed on Figure 4-1. The subsurface soil sampling rationale is listed in Table 4-1. Subsurface soil samples to be collected are listed in Table 4-2. The final soil boring sampling locations will be determined in the field by the on-site geologist based on actual field observations and utility clearance results.

Sample Locations And Rationale
Former Motor Pool Area 1800/1900
Parcels 145(7), 52(7)
Fort McClellan, Calhoun County, Alabama

Sample Location	Sample Media	Sample Location Rationale
FTA-145-GP01	Subsurface soil	One soil boring will be placed adjacent (east side of UST) to the heating oil UST at the south end of Building 1997. Sample data will indicate if the UST has leaked or contaminated soil exists.
FTA-145-GP02	Surface soil, subsurface soil, and groundwater	One soil boring will be placed at parking lot drain east of flammable storage building and southeast of Building T-1997. Sample data will indicate if potential site-specific chemicals (PSSC) were released during motor pool operations and may have accumulated in this low area.
FTA-145-GP03	Surface soil, subsurface soil, and groundwater	One soil sample boring will be placed in front of roll up door on east side of Building 1898. Sample data will indicate if PSSC were released in this area during motor pool operations or other activities.
FTA-145-GP04	Surface soil, subsurface soil, and groundwater	One soil sample boring will be placed in front of roll up door on east side of Building 1899. Sample data will indicate if PSSC were released in this area during former motor pool operations or other activities.
FTA-145-GP05	Surface soil, subsurface soil, and groundwater	One soil boring will be placed adjacent to concrete foundation that may have been a wash rack during former motor pool activities. Sample data will indicate if PSSC were released in this area during former motor pool operations or other activities.
FTA-145-GP06	Surface soil, subsurface soil, and groundwater	One soil sample boring will be placed in the low drainage area south of Building T-1997 and the fenced parking lot. This location is north of Building 1898. This sample data will indicate if PSSC were released during the operation of this motor pool area and if any PSSC may have accumulated from runoff in this area.
FTA-145-GP07	Surface soil, subsurface soil, and groundwater	One soil boring will be placed in the gravel driveway around the south traffic islands in front of Buildings 1898 and 1899. Sample data will indicate if PSSC were released in this area during former motor pool operations or other activities.
FTA-145-GP08	Surface soil, subsurface soil, and groundwater	A second soil boring will be placed in the gravel driveway around the center traffic islands in front of Buildings 1898 and 1899. Sample data will indicate if PSSC were released in this area during former motor pool operations or other activities.
FTA-145-GP09	Surface soil, subsurface soil, and groundwater	A third soil boring will be placed in the gravel driveway around the north traffic islands in front of Buildings 1898 and 1899. Sample data will indicate if PSSC were released in this area during former motor pool operations or other activities.
FTA-145-GP10	Surface soil, subsurface soil, and groundwater	One soil boring will be placed in the low drainage area at the northwest end of Building 1997. Sample data will indicate if PSSC were released in this area during former motor pool operations or other activities and may have accumulated in this low drainage pathway.
FTA-145-GP11	Subsurface soil	One soil boring will be placed adjacent (south side of UST) to the heating oil UST at the south end of Building 1997. Sample data will indicate if the UST has leaked or contaminated soil exists.
FTA-145-GP12	Surface soil, subsurface soil, and groundwater	One soil boring will be placed in the gravel driveway in the northeast section where two above ground grease racks were observed on early aerial photographs. Sample data will indicate if PSSC were released in this area during former motor pool operations or other activities.
FTA-145-SW/SD01	Surface water and sediment	Sample location is a potential downgradient sink for PSSC from the site. Evidence of PSSC mobility at any point within the site would likely be reflected at this location.
FTA-145-SW/SD02	Surface water and sediment	Sample location is a potential downgradient sink for PSSC from the site. Evidence of PSSC mobility at any point within the site would likely be reflected at this location.
FTA-145-DEP01	Depositional soil	Sampling location represents a low elevation area where surface water runoff could collect, and potentially percolate into the substratum or deposit suspended or dissolved materials after evaporation.
		Sampling location represents a low elevation area where surface water runoff could collect, and potentially percolate into the substratum or deposit suspended or

Surface, Subsurface, and Depositional Soil Sample Designations and QA/QC Sample Quantities
Former Motor Pool Area 1800/1900, Parcels 145(7) and 52(7)
Fort McClellan, Calhoun County, Alabama

Sample Location	Sample Designation	Sample Depth (ft)	QA/QC Samples			Analytical Suite
			Field Duplicates	Field Splits	MS/MSD	
FTA-145-GP01	FTA-145-GP01-DS-CY0001-REG	a				TCL VOCs, TCL SVOCs, TAL Metals
FTA-145-GP02	FTA-145-GP02-SS-CY0002-REG	0-1				TCL VOCs, TCL SVOCs, TAL Metals
	FTA-145-GP02-DS-CY0003-REG	b				TCL VOCs, TCL SVOCs, TAL Metals
FTA-145-GP03	FTA-145-GP03-SS-CY0004-REG	0-1				TCL VOCs, TCL SVOCs, TAL Metals
	FTA-145-GP03-DS-CY0005-REG	b				TCL VOCs, TCL SVOCs, TAL Metals
FTA-145-GP04	FTA-145-GP04-SS-CY0006-REG	0-1				TCL VOCs, TCL SVOCs, TAL Metals
	FTA-145-GP04-DS-CY0007-REG	b				TCL VOCs, TCL SVOCs, TAL Metals
FTA-145-GP05	FTA-145-GP05-SS-CY0008-REG	0-1				TCL VOCs, TCL SVOCs, TAL Metals
	FTA-145-GP05-DS-CY0009-REG	b				TCL VOCs, TCL SVOCs, TAL Metals
FTA-145-GP06	FTA-145-GP06-SS-CY0010-REG	0-1	FTA-145-GP06-SS-CY0011-FD	FTA-145-GP06-SS-CY0012-FS		TCL VOCs, TCL SVOCs, TAL Metals
	FTA-145-GP06-DS-CY0013-REG	b				TCL VOCs, TCL SVOCs, TAL Metals
FTA-145-GP07	FTA-145-GP07-SS-CY0014-REG	0-1			FTA-145-GP07-SS-CY0014-MS	TCL VOCs, TCL SVOCs, TAL Metals
	FTA-145-GP07-DS-CY0015-REG	b			FTA-145-GP07-SS-CY0014-MSD	TCL VOCs, TCL SVOCs, TAL Metals
FTA-145-GP08	FTA-145-GP08-SS-CY0016-REG	0-1				TCL VOCs, TCL SVOCs, TAL Metals
	FTA-145-GP08-DS-CY0017-REG	b				TCL VOCs, TCL SVOCs, TAL Metals
FTA-145-GP09	FTA-145-GP09-SS-CY0018-REG	0-1				TCL VOCs, TCL SVOCs, TAL Metals
	FTA-145-GP09-DS-CY0019-REG	b				TCL VOCs, TCL SVOCs, TAL Metals
FTA-145-GP10	FTA-145-GP10-SS-CY0020-REG	0-1				TCL VOCs, TCL SVOCs, TAL Metals
	FTA-145-GP10-DS-CY0021-REG	b	FTA-145-GP10-DS-CY0022-FD	FTA-145-GP10-DS-CY0023-FS		TCL VOCs, TCL SVOCs, TAL Metals
FTA-145-GP11	FTA-145-GP11-DS-CY0024-REG	a				TCL VOCs, TCL SVOCs, TAL Metals
FTA-145-GP12	FTA-145-GP12-SS-CY0025-REG	0-1				TCL VOCs, TCL SVOCs, TAL Metals
	FTA-145-GP12-DS-CY0026-REG	b				TCL VOCs, TCL SVOCs, TAL Metals
FTA-145-DEP01	FTA-145-DEP01-DEP-CP0027-REG	0-1				TCL VOCs, TCL SVOCs, TAL Metals
FTA-145-DEP02	FTA-145-DEP02-DEP-CP0028-REG	0-1				TCL VOCs, TCL SVOCs, TAL Metals

*Sample depth will be immediately below the estimated depth of the UST.

^b Actual sample depth selected for analysis will be at the discretion of the site geologist and will be based on field observation.

QA/QC - Quality assurance/quality control.
VOC - Volatile organic compound.
SVOC - Semivolatile organic compound.

TAL - Target analyte list.
TCL - Target compound list.
REG - Field sample.

FD - Field duplicate.
FS - Field split.
MS/MSD - Matrix spike/matrix spike duplicate.

4.3.2.2 Sample Collection Procedures

Subsurface soil samples will be collected from soil borings at depths greater than 1 foot below ground surface in the unsaturated zone. Direct-push sampling methodology, provided in Sections 4.7.1.1 and 4.9.1.1 of the SAP, will be utilized to advance the soil borings and collect the soil samples.

Soil samples will be collected continuously for the first 12 feet or until either groundwater or refusal is reached. A detailed lithological log will be recorded by the on-site geologist for each borehole. At least one subsurface sample from each borehole will be selected for analyses. The collected subsurface soil samples will be field-screened using a photoionization detector (PID) in accordance with Section 4.15 of the SAP to measure samples exhibiting elevated readings above background. Typically, the subsurface soil sample showing the highest reading will be selected and sent to the laboratory for analysis. If none of the samples indicate readings above background using the PID, the deepest interval from the soil boring will be sampled and submitted to the laboratory for analysis. Subsurface soil samples will be selected for analyses from any depth interval if the on-site geologist suspects PSSC at the interval. Site conditions such as lithology may also determine the actual sample depth interval submitted for analyses. More than one subsurface soil sample will be collected if field measurements and observations indicate a possible layer of PSSC and/or additional sample data would provide insight to the existence of any PSSC.

Sample containers, sample volumes, preservatives and holding times for the analyses required in this SFSP are listed in Section 5.0, Table 5-1, of the QAP. Sample documentation and chain-of-custody will be recorded as specified in Section 4.13 of the SAP. The samples will be analyzed for the parameters listed in Section 4.6.

4.3.3 Groundwater Sampling

Groundwater samples will be collected from direct-push temporary wells completed inside ten of the twelve soil borings installed at the Former Motor Pool Area 1800/1900 site.

4.3.3.1 Sample Locations and Rationale

Groundwater samples will be collected from the direct-push temporary wells installed at the site. The groundwater sampling rationale is listed in Table 4-1. Groundwater samples will be collected from the ten temporary wells proposed on Figure 4-1. Groundwater sample designations and required QA/QC sample requirements are summarized in Table 4-3. The exact soil boring locations from which groundwater samples will be collected will be determined in the field by the on-site geologist based on actual field observations and utility clearance results

4.3.3.2 Sample Collection Procedures

Groundwater sample collection will be collected in accordance with the procedures specified in Section 4.7.1.1 of the SAP. The direct-push temporary well at each location will be advanced to the water table (to a depth where sufficient water is encountered) to collect a groundwater sample.

Sample documentation and chain-of-custody will be recorded as specified in Section 4.13 of the SAP. Sample containers, sample volumes, preservatives and holding times for the analyses required in this SFSP are listed in Section 5.0, Table 5-1 of the QAP. The samples will be analyzed for the parameters listed in Section 4.6 of this SFSP.

4.3.4 Surface Water Sampling

Two surface water samples will be collected from the South Branch of Cane Creek that flows along the west side of the Former Motor Pool Area 1800/1900 site.

4.3.4.1 Sample Locations and Rationale

The surface water sampling rationale are listed in Table 4-1. Surface water samples will be collected from the locations proposed on Figure 4-1. The surface water sample designations and required QA/QC sample requirements are listed in Table 4-4. The exact sampling locations will be determined in the field by the ecological sampler based on drainage pathways and actual field observations.

4.3.4.2 Sample Collection Procedures

Surface water samples will be collected in accordance with the procedures specified in Section 4.9.1.3 of the SAP. Sample documentation and chain-of-custody will be recorded as specified in Section 4.13 of the SAP. Sample containers, sample volumes, preservatives and holding times

Table 4-3

**Groundwater Sample Designations and QA/QC Sample Quantities
Former Motor Pool Area 1800/1900, Parcels 145(7) and 52(7)
Fort McClellan, Calhoun County, Alabama**

Sample Location	Sample Designation	Sample Depth (ft)	QA/QC Samples			Analytical Suite
			Field Duplicates	Field Splits	MS/MSD	
FTA-145-GP02	FTA-145-GP02-GW-CY3001-REG	^a Water Table				TCL VOCs, TCL SVOCs, TAL Metals
FTA-145-GP03	FTA-145-GP03-GW-CY3002-REG	^a Water Table				TCL VOCs, TCL SVOCs, TAL Metals
FTA-145-GP04	FTA-145-GP04-GW-CY0003-REG	^a Water Table				TCL VOCs, TCL SVOCs, TAL Metals
FTA-145-GP05	FTA-145-GP05-GW-CY3004-REG	^a Water Table				TCL VOCs, TCL SVOCs, TAL Metals
FTA-145-GP06	FTA-145-GP06-GW-CY3005-REG	^a Water Table	FTA-145-GP06-GW-CY3006-FD	FTA-145-GP06-GW-CY3007-FS		TCL VOCs, TCL SVOCs, TAL Metals
FTA-145-GP07	FTA-145-GP07-GW-CY3008-REG	^a Water Table			FTA-145-GP07-GW-CY3008-MS FTA-145-GP07-GW-CY3008-MSD	TCL VOCs, TCL SVOCs, TAL Metals
FTA-145-GP08	FTA-145-GP08-GW-CY3009-REG	^a Water Table				TCL VOCs, TCL SVOCs, TAL Metals
FTA-145-GP09	FTA-145-GP09-GW-CY3010-REG	^a Water Table				TCL VOCs, TCL SVOCs, TAL Metals
FTA-145-GP10	FTA-145-GP10-GW-CY3011-REG	^a Water Table				TCL VOCs, TCL SVOCs, TAL Metals
FTA-145-GP12	FTA-145-GP12-GW-CY3012-REG	^a Water Table				TCL VOCs, TCL SVOCs, TAL Metals

^a Groundwater sample depth will be dependant on where first water is encountered in the boring sufficiently to collect a groundwater sample.

QA/QC - Quality assurance/quality control.

VOC - Volatile organic compound.

SVOC - Semivolatile organic compound.

TAL - Target analyte list.

TCL - Target compound list.

REG - Field sample.

FD - Field duplicate.

FS - Field split.

MS/MSD - Matrix spike/matrix spike duplicate.

Table 4-4

Surface Water and Sediment Sample Designation and QA/QC Sample Quantities
Former Motor Pool Area 1800/1900, Parcels 145(7) and 52(7)
Fort McClellan, Calhoun County, Alabama

Sample Location	Sample Designation	QA/QC Samples			Analytical Suite
		Field Duplicates	Field Splits	MS/MSD	
FTA-145-SW/SD01	FTA-145-SW/SD01-SW-CP2001-REG				TCL VOCs, TCL SVOCs, TAL Metals
FTA-145-SW/SD01	FTA-145-SW/SD01-SD-CP1001-REG				TCL VOCs, TCL SVOCs, TAL Metals TOC, Grain Size
FTA-145-SW/SD02	FTA-145-SW/SD02-SW-CP2002-REG				TCL VOCs, TCL SVOCs, TAL Metals
FTA-145-SW/SD02	FTA-145-SW/SD02-SD-CP1002-REG	FTA-145-SW/SD02-SD-CP1003-FD	FTA-145-SW/SD02-SD-CP1004-FS		TCL VOCs, TCL SVOCs, TAL Metals TOC, Grain Size

QA/QC - Quality assurance/quality control.

VOC - Volatile organic compound.

SVOC - Semivolatile organic compound.

TAL - Target analyte list.

TCL - Target compound list.

REG - Field sample.

FD - Field duplicate.

FS - Field split.

MS/MSD - Matrix spike/matrix spike duplicate.

TOC - Total Organic Carbon

for the analyses required in this SFSP are listed in Section 5.0, Table 5-1, of the QAP. The samples will be analyzed for the parameters listed in Section 4.6.

4.3.5 Sediment Sampling

Two sediment samples will be collected along South Branch of Cane Creek, west of the Former Motor Pool Area 1800/1900 site. These sediment samples will be collected at the same locations as the surface water samples described in Section 4.3.4.

4.3.5.1 Sample Locations and Rationale

The locations for the two sediment samples to be collected along South Branch, west of the site are shown in Figure 4-1. Sediment sampling rationale is presented in Table 4-1. Sediment sample designations and required QA/QC sample requirements are listed in Table 4-4. The actual sediment sample points will be at the discretion of the ecological sampler based on the drainage pathways and actual field observations.

4.3.5.2 Sample Collection Procedures

Sediment samples will be collected in accordance with the procedures specified in Section 4.9.1.2 of the SAP. Sample documentation and chain-of-custody will be recorded as specified in Section 4.13 of the SAP. The sediment samples will be analyzed for the parameters listed in Section 4.6.

4.3.6 Depositional Soil Sampling

Two depositional soil samples will be collected in the drainage pathways northwest of the site.

4.3.6.1 Sample Locations and Rationale

Depositional soil samples will be collected in the drainage pathways outside the fence at the northwest corner of the site. The sampling rationale is listed in Table 4-1. The proposed sampling locations are shown in Figure 4-1. The depositional soil sample designations, depths, and required QA/QC sample requirements are summarized in Table 4-2. The actual depositional soil sample points will be at the discretion of the ecological sampler based on the drainage pathways and actual field observations.

4.3.6.2 Sample Collection Procedures

Depositional soil sample collection will be conducted in accordance with the procedures for surface soil sample collection specified in Section 4.9.1.1 of the SAP. Sample documentation

and chain-of-custody will be recorded as specified in Section 4.13 of the SAP. Sample containers, sample volumes, preservatives and holding times for the analyses required in this SFSP are listed in Section 5.0, Table 5-1, of the SAP. The samples will be analyzed for the parameters listed in Section 4.6.

4.4 Decontamination Requirements

Decontamination will be performed on sampling and nonsampling equipment to prevent cross-contamination between sampling locations. Decontamination of sampling equipment will be performed in accordance with the requirements presented in Section 4.10.1.1 of the SAP. Decontamination of nonsampling equipment will be performed in accordance with the requirements presented in Section 4.10.1.2 of the SAP.

4.5 Surveying of Sample Locations

Sampling locations will be marked with pin flags, stakes, and/or flagging and will be surveyed using either global positioning system (GPS) or conventional civil survey techniques, as necessary to obtain the required level of accuracy. Horizontal coordinates will be referenced to the Alabama State Plane coordinate system, 1983 North American Datum (NAD83). Elevations will be referenced to the National Geodetic Vertical Datum of 1929 or the North American Vertical Datum of 1988 (soon to be established on site).

Horizontal coordinates for soil, sediment, and surface water locations will be recorded using a GPS to provide accuracy within 1 meter. Because of the need to use temporary wells to determine water levels, a higher level of accuracy is required. Temporary wells will be surveyed to an accuracy of 0.1 foot for horizontal coordinates and 0.01 foot for elevations, using survey-grade GPS techniques and/or conventional civil survey techniques, as required. Permanent monitoring well locations will be surveyed by a registered professional land surveyor to provide the required accuracy of 0.1 foot for horizontal coordinates and 0.01 foot for elevations.

Procedures to be used for GPS surveying are described in Section 4.3 of the SAP. Conventional land survey requirements are presented in Section 4.19 of the SAP.

4.6 Analytical Program

Samples collected at locations specified in this chapter of this SFSP will be analyzed for the specific suites of chemicals and elements based the history of site usage, as well as the EPA,

ADEM, FTMC, and USACE requirements. Target analyses for samples collected from the Former Motor Pool Area 1800/1900 site consist of the following list of analytical suites:

- TCL VOCs - Method 5035/8260B
- TCL SVOCs - Method 8270C
- TAL Metals – Method 6010B/7000.

In addition, the sediment samples will be analyzed for the following list of parameters as well:

- Total Organic Carbon – Method 9060
- Grain Size – ASTM D-421/D-422.

The samples will be analyzed using EPA SW-846 methods, including Update III Methods where applicable, as presented in Table 4-5 in this SSFP and Table 6-1 in the QAP. Data will be reported and evaluated in accordance with CESAS Level B criteria (USACE, 1994) and the stipulated requirements for the generation of definitive data (Section 3.1.2 of the QAP). Chemical data will be reported via hard copy data packages by the laboratory using CLP-like forms. These packages will be validated in accordance with EPA National Functional Guidelines by Level III criteria.

4.7 Sample Preservation, Packaging, and Shipping

Sample preservation, packaging, and shipping will follow the procedures specified in Section 4.13.2 of the SAP. Completed analysis request/chain-of-custody records will be secured and included with each shipment of coolers to:

Attn: Sample Receiving
Quanterra Environmental Services
5815 Middlebrook Pike
Knoxville, Tennessee 37921
Telephone: (423) 588-6401

QA split samples collected for the USACE laboratory will be shipped to the following address:

Sample Receiving
USACE South Atlantic Division Laboratory
611 South Cobb Drive
Marietta, Georgia 30060-3112
Telephone: (770) 919-5270.

Table 4-5

Analytical Samples
Former Motor Pool Area 1800/1900, Parcels 145(7) and 52(7)
Fort McClellan, Calhoun County, Alabama

Parameters	Analysis Method	Sample Matrix	TAT Needed	Field Samples			QA/QC Samples ^a					Quanterra	QA Lab
				No. of Sample Points	No. of Events	No. of Field Samples	Field Dups (10%)	Splits w/ QA Lab (10%)	MS/MSD (5%)	Trip Blank (1/ship)	Eq. Rinse (1/wk/matrix)	Total No. Analysis	Total No. Analysis
Former Motor Pool Area 1800/1900: 12 water matrix samples (10 groundwater and 2 surface water); 26 soil matrix samples (10 surface soil, 12 subsurface soil, 2 sediment and 2 depositional soil samples)													
TCL VOCs	8260B	water	normal	12	1	12	1	1	1	3	1	19	1
TCL SVOCs	8270C	water	normal	12	1	12	1	1	1	1	1	16	1
Tot TAL Metals	6010B/7000	water	normal	12	1	12	1	1	1	1	1	16	1
TCL VOCs	8260B	soil	normal	26	1	26	3	3	1	1	1	32	3
TCL SVOCs	8270C	soil	normal	26	1	26	3	3	1	1	1	32	3
TAL Metals	6010B/7000	soil	normal	26	1	26	3	3	1	1	1	32	3
TOC	9060	sediment	normal	2	1	2						2	0
Grain Size	ASTM D-421/D-422	sediment	normal	2	1	2						2	0
Former Motor Pool Area 1800/1900 Subtotal:							12	12	6	3	6	151	12

^aField duplicate, QA split, and MS/MSD samples were calculated as a percentage of the field samples collected per site and were rounded up to the nearest whole number. Trip blank samples will be collected in association with water matrix samples for VOC analysis only. Assumed 4 field samples per day to estimate trip blanks. Equipment blanks will be collected once per event whenever sampling equipment is field decontaminated and re-used. They will be repeated weekly for sampling events that are anticipated to last more than 1 week. Assumed 20 field samples will be collected per week to estimate number of equipment blanks.

Ship samples to:

Quanterra Environmental Services
5815 Middlebrook Pike
Knoxville, Tennessee 37921
Attn: John Reynolds
Tel: 423-588-6401 Fax: 423-584-4315

USACE Laboratory split samples
are shipped to:

USACE South Atlantic Division Laboratory
Attn: Sample Receiving
611 South Cobb Drive
Marietta, Georgia 30060-3112
Tel: 707-919-5270

QA/QC - Quality assurance/quality control.
MS/MSD - Matrix spike/matrix spike duplicate.
VOC - Volatile organic compound
SVOC - Semivolatile organic compound.
TAL - Target analyte list.
TCL - Target compound list.
TOC - Total organic carbon

4.8 Investigation-Derived Waste Management

Management and disposal of the investigation-derived wastes (IDW) will follow procedures and requirements as described in Appendix D of the SAP. The IDW expected to be generated at the Former Motor Pool Area 1800/1900 site will include decontamination fluids and disposable personal protective equipment. The IDW will be staged in the fenced area surrounding Buildings 335 and 336 while awaiting final disposal.

4.9 Site-Specific Safety and Health

Health and safety requirements for this site investigation are provided in the SSHP attachment for the Former Motor Pool Area 1800/1900 site, 145(7), 52(7). The SSHP attachment will be used in conjunction with the installation-wide SHP.

5.0 Project Schedule

The project schedule for the site investigation activities will be provided by the IT project manager to the Base Closure Team and will be in accordance with the WP.

6.0 References

Environmental Science and Engineering, Inc. (ESE), 1998, *Final Environmental Baseline Survey, Fort McClellan, Alabama*, prepared for U.S. Army Environmental Center, Aberdeen Proving Ground, Maryland, January.

Fort McClellan Reuse and Redevelopment Authority of Alabama (FMRRRA), 1997, *Fort McClellan Comprehensive Reuse Plan*, prepared under contract to the Calhoun County Commission, November.

IT Corporation (IT), 1998a, *Final Installation-Wide Sampling and Analysis Plan, Fort McClellan, Calhoun County, Alabama*, October.

IT Corporation (IT), 1998b, *Final Installation-Wide Work Plan, Fort McClellan, Calhoun County, Alabama*, October.

Pence, Waymon, 1995, Personal Interview with Allison Holtzendorf and William Elliott, regarding FTMC Buildings, Fort McClellan, Alabama, November 7.

Southern Environmental Management & Specialties (SEMS), 1997, *Closure Report, Underground Storage Tank removals, Site Remediation, and Site Restoration, Fort McClellan, Alabama*, February.

U.S. Army Corps of Engineers (USACE), 1998, *Statement of Work for Task Order CK005, Site Investigations at Fort McClellan, Alabama*, January.

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U.S. Department of Agriculture (USDA), 1961, *Soil Survey, Calhoun County, Alabama*, Soil Conservation Service, Series 1958, No. 9, September 1961.

U.S. Environmental Protection Agency (EPA), 1993, *Data Quality Objectives Process for Superfund, Interim Final Guidance*, EPA 540-R-93-071, September.

Roy F. Weston, Inc. (Weston), 1990, *Final USATHAMA Task Order 11, Enhanced Preliminary Assessment, Fort McCellan, Anniston, Alabama*, prepared for U.S. Army Toxic and Hazardous Materials Agency, Aberdeen Proving Ground, Maryland, December.